Functions

Lecture 02

Reading: Chapter 3

Function syntax

- Keyword: def for define

- Functions are characterized by the paranteses!

- Examples we have encountered:
  - range(5)
  - int(), str(), float()
  - math.sqrt()

Math module

- We talked about math module earlier.

- Keyword: import

- You import the functions AND variables from the module

- A module is sort of a script:
  - It contains necessary functions and variables used by other programs

- If you need all the math module functions:
  https://docs.python.org/2/library/math.html

Math module: Function composition

- You can call functions within functions!
- You can also put expressions within functions
- Evaluate:

degrees = 45

math.sin(degrees / 360.0 * 2 * math.pi)

- Evaluate:

x = 2

x = math.exp(math.log(x+8))

print x

Let's make our own functions

```
# This is an example code


def myFunction():
        # Example code for print
        print "print print print!"
```

Flow of execution

- This makes more sense with an example after this slide.

- Remember to read top to bottom with Python script:
  - BUT! If a function is called, Python will go to the function body and will go top to bottom until function is finished
  - Then restart where the function was called.

Exercise: Create a program that displays the two batches of cookies

Recipe to make two batches of cookies!

Mix the dry ingredients.

Cream the butter and sugar.

Beat in the eggs.

Stir in the dry ingredients.

Set the oven temperature.

Set the timer.

Place a batch of cookies in the oven.

Allow the cookies to bake.
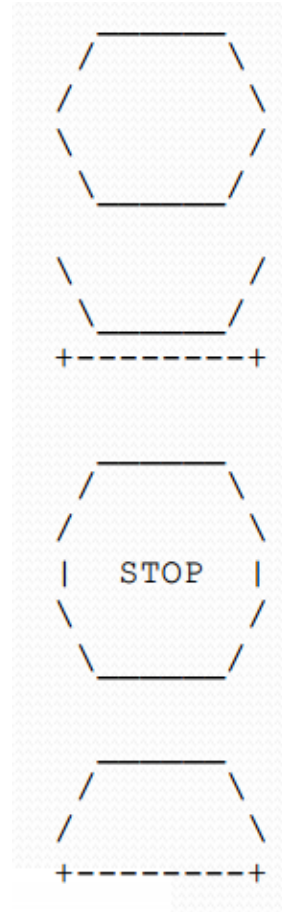
Set the oven temperature.

Set the timer.

Place a batch of cookies in the oven.

Allow the cookies to bake.

Mix ingredients for frosting.

Spread frosting and sprinkles.

Exercise: Recreate the following figure

A harder exercise! (can be saved for later)

- Create a Python program that converts Fahrenheit to Celsius and vice versa.

- Expected output (It needs to be exactly the same):

```
57.0 degree F is equal to 13.9 degree C
34.0 degree C is equal to 93.2 degree F
```